NOTIFICATION OF ADDENDUM

ADDENDUM NO. 1

DATED 6/25/2015

Control	**0906-32-049**
Project	**STP 1502(406)**
Highway	**CS**
County	**MIDLAND**

Ladies/Gentlemen:

Attached please find an addendum on the above captioned project. Included in the attachment is an adendum notification which details the changes and the respective proposal pages which were added and/ or changed.

Except for new bid insert pages, it is unnecessary to return any of the pages attached.

Bid insert pages must be returned with the bid proposal submitted to the Department, unless your firm is submitting a bid using a computer print out. The computer print out must be changed to reflect the new bid item information.

Contractors and material suppliers, etc. who have previously been furnished informational proposals are not being furnished a copy of the addendum. If you have a subcontractor on the above project, please advise them of this addendum. Acknowledgment of this addendum is not requested if your company has been issued a proposal stamped “This Proposal Issued for Informational Purposes.”

You are required to acknowledge receipt of this addendum on the Addendum Acknowledgement form contained in your bid proposal by placing a mark in the box next to the respective addendum.

Failure to Acknowledge receipt of this addendum in your bid proposal will result in your bid not being read.

04/99

SUBJECT: PLANS AND PROPOSAL ADDENDUMS

PROJECT: STP 1502(406) CONTROL: 0906-32-049

COUNTY: MIDLAND

LETTING: 07/07/2015

REFERENCE NO: 0624

PROPOSAL ADDENDUMS

_ PROPOSAL COVER

_ BID INSERTS (SH. NO.:)

X GENERAL NOTES (SH. NO.: A)

_ SPEC LIST (SH. NO.:)

_ SPECIAL PROVISIONS:

ADDED:

DELETED:

_ SPECIAL SPECIFICATIONS:

ADDED:

DELETED:

X OTHER: PLAN SHEET AND OTHER CHANGES

DESCRIPTION OF ABOVE CHANGES
(INCLUDING PLANS SHEET CHANGES)

*****GENERAL NOTES*****
SHEET A: REVISED GENERAL NOTES FOR GRADING REQUIREMENTS

PLAN SHEETS
****
SHEET 7 (GENERAL NOTES): REVISED GENERAL NOTE AS INDICATED ABOVE

General Notes:

Material Specification Information

Grading Requirements

Item	Description	Grading Requirements Percent Retained - Sieves				Soil Constants		Wet Ball Mill
						L.L. Max.	P.I. Max.	Max.
		1-3/4”	7/8”	3/8”	#40			
247	Type A GR 4	0-3	10-35	20-55	65-85	40	12	45

The maximum increase in material passing the number 40 sieve resulting from the wet ball mill test shall not exceed 20%.

Clean all proposed structures of silt and debris by the completion of the project.

Item 5: Control of the Work

The following TxDOT department standards have been modified for this project:

PCO

Use Method C for construction surveying.

Item 7: Legal Relations And Responsibilities

Restrict storage of equipment and materials to approved areas. The Engineer will not approve storage in any TxDOT yard.

Properly dispose of any waste generated from servicing equipment on the project.

If access to the project is required through a new or unapproved driveway (i.e. Material source, stockpile location, field office, etc.), obtain an approved “Permit to Construct Access Driveway Facilities on Highway Right of Way” (TxDOT Form 1058) before beginning any construction operations.

Direct attention to the presence of existing utilities (public, private and TxDOT) throughout the project, and prior to any excavation, investigate to determine utility locations within the project right-of-way. Contact the TxDOT Odessa Traffic Operations Shop at 432-498-4690 to investigate and determine if and where the location of any TxDOT utility may exist within the project right-of-way. Exercise caution when excavating in areas where investigations have determined that utilities exist.

The City of Midland is currently in the process of acquiring all necessary ROW documents for this project. Contractor should be prepared to present a work schedule for this project in the areas where ROW or easements are not needed to ensure timely completion of this project.

The City of Midland has contacted all franchise utility companies along this corridor and working through the necessary franchise utility relocations needed. In the event that the franchise utility companies are non-responsive to the City's request, Contractor needs to be prepared to coordinate with these franchise utility companies during construction. Contractor should be prepared to present a work schedule for this project in the areas where franchise utility relocations are not needed to ensure timely completion of this project.

The Contractor Force Account "Safety Contingency" that has been established for this project is intended to be utilized for work zone enhancements, to improve the effectiveness of the Traffic Control Plan, that could not be foreseen in the project planning and design stage. These enhancements will be mutually agreed upon by the Engineer and the Contractor's Responsible Person based on weekly or more frequent traffic management reviews on the project. The Engineer may choose to use existing bid items if it does not slow the implementation of enhancement.

Item 8: Prosecution And Progress

The following portions of the plans may affect the Contractor's planned construction sequencing. Direct attention to the appropriate plan sheet or standard sheet.

-Traffic Control Plan
-Storm Water Pollution Prevention Plan
-Environmental Permit, Issues and Commitments (EPIC)

Maintain ingress and egress to side streets and private property at all times.

Initiate the installation of Item 628 "Electrical Services" as part of the initial work sequence to allow City of Midland the lead-time necessary for coordination with utility companies to establish and provide for electrical service(s) proposed for this project.

Working day charges will start 120 calendar days after receipt of the notice to proceed.

Item 105: Removing Treated And Untreated Base And Asphalt Pavement

Saw cut and remove existing asphaltic pavement by an approved method.

Item 110: Excavation

In all excavated areas, broom the existing base or subgrade to remove any loose material. This work is considered subsidiary to this item.

Before excavation and embankment operations begin, windrow all topsoil (approx. 4 inches) to be reused on side slopes or behind the proposed curb and gutter. This work is subsidiary to Item110, "Excavation" and Item132, "Embankment".

Item 132: Embankment

For all material with a plasticity index of less than 20, use test method Tex-113-E in lieu of test method Tex-114-E for determining the percent of density.

Material quality test requirements will be waived for material excavated from the right of way on this project and utilized in embankment.

Item 150: Blading

Preserve the top 4" of topsoil outside of the work area. Preserve this material in windrows until topsoil can be replaced and seeded to stabilize all exposed terrain.

Item 160: Topsoil

Topsoil will be typical of the soils in the area with no noxious weeds, grasses, sticks, roots, or stones present and will be consistent in texture. No rocks larger than two inches in diameter will be permitted. The topsoil and its source will be approved. Topsoil will not be paid for directly but is subsidiary to Item192 "Plant Bed Preparation".

Furnish and place clean, friable topsoil at the depth noted in the plans. Topsoil should not have excessive clods or rocks exceeding 2” diameter. Topsoil is to be from a source that is approved by the Engineer prior to placement. Blow sand is not acceptable.

Item 170: Irrigation System

The drawings are generally diagrammatic and indicative of the irrigation system to be installed. Due to the scale of the drawings, it is not possible to indicate all offsets, fittings, and sleeves which may be required. Carefully investigate the site conditions affecting all work and plan work accordingly, furnishing such offsets and sleeves required to meet site conditions. Do not willfully install the irrigation system as shown on the drawings when it is obvious in the field that obstructions or differences should be brought to the attention of the engineer who will recommend any necessary changes.

This work will be considered incidental to the project. Assume full responsibility for any revisions necessary in the event this notification is not performed.

Irrigation in Texas is regulated by the Texas Commission on Environmental Quality, P.O. Box 13087, Austin, Texas 78711-3087.

The water source for this project is an existing water well located on the golf course property.

Materials
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1. Underground Pipe. All PVC pipe is Sch 40 in the sizes indicated on the plans. Pipe is pressure rated with slip type solvent welded joints.

2. Remote Control Valves. All remote control valves have a brass or stainless steel flow control stem for flow regulation. All remote control valves are Rainbird PEB series .

3. Sediment Filters. All sediment filters for the entire project are two inch RUSCO model #2-150 . All filters have a minimum 150 mesh filter.

4. Pressure Regulators. Pressure regulators are Wilkins 500 series pressure reducing valves preset to 45 psi.

5. Valve Boxes. All valves are mounted below grade in plastic Meter boxes with cast iron lid and ring. Unless otherwise noted on plans. All valve boxes are model # 548P18 or approved equal.

6. Drip Irrigation Equipment. All drip tubing is Netafim Techline cv pressure compensating tubing. Block sod area. Install Netafim Techline cv 0.4 gph flow pressure compensating drip tubing.

Bed area. Install Netafim Techline cv 0.6 gph flow pressure compensating drip tubing.

Trees. Install Netafim Techline cv 0.9 gph flow pressure compensating drip tubing.

7. Backflow Assembly. The backflow assembly shall be a reduced pressure principle Wilkins model #975xls or approved equal.

8. Miscellaneous Fittings. Furnish all other fittings and appurtenances necessary to complete the system.

9. Control Wire. Use 14 gauge minimum low voltage control wire, color coded, and specifically manufactured for direct burial. Make all wire connections and splices with waterproof compression clamps covered with scotch fill or an approved equal. Install wire in a one and a quarter inch gray PVC conduit which cannot be installed directly in a pipe trench.

10. Controller. Controller shall be Rainbird model #esp-mc16 Station controller) or approved equal. Controller shall be installed in strict accordance with the manufacturer's specifications. Controller shall be located as shown on the plans or as approved by the Engineer.

11. Solvent Cement. Solvent cement shall be the type recommended by the pipe manufacturer.

Construction methods

Excavation and backfilling:
Excavate and backfill as required for the proper installation of the pipe and other equipment. Excavation depth and pipe location will be in strict accordance with the dimensions and notes on the plans. No deviation in the piping shown on the plans is permitted without approval, in writing, from the Engineer. Minor adjustments to the layout that may be necessary to avoid unforeseen underground obstructions may be made if the adjustments are recorded on the field drawings and incorporated into the "as-built drawings" described herein.

Trench excavation:
Follow, as much as possible, the layout indicated on the drawing. Dig trenches straight and support pipe continuously on bottom of trench. Lay pipe to an even grade. Trench shall be clean and smooth with all organic debris and sharp objects removed. Snake pipe in trench, as much as possible, to allow for expansion and contraction. Do not install solvent weld pipe when air temperature is below 40 degrees Fahrenheit. Cut plastic pipe with a hand saw, in a manner that will insure a square cut. Remove burrs at cut ends prior to installation so that a smooth unobstructed flow will be obtained. Follow manufacturer's recommendations for making plastic to plastic joints.

Depth of cover:
Cover all irrigation lateral lines a minimum of twelve inches cover unless otherwise noted. Cover all irrigation mainlines a minimum of sixteen inches cover
Unless otherwise noted.

Backfill:
Do not use backfill material with sharp rock, stones greater than two inches , or other materials that could damage pipe during the backfilling operations. In the
Event rocky conditions exist, install a cushion of sand two inches above and below the pipe. Do not backfill in freezing weather except with written approval of the Engineer. Continuously clear the work site of excess and/or waste materials as the backfilling progresses and leave the area in a workmanlike condition. Cover and clearly flag all open trenches.

2. Installation of drip irrigation equipment. Install all drip tubing according to manufacturer's recommendations. Thoroughly flush out drip tubing prior to sealing off the exhaust headers or closing off of loop systems.

3. Installation of valves. Install all valves in approved valve boxes which must reach to at least two inches below the bottom of the valve. Install all valves at a depth of twelve inches .

4. Installation of backflow assembly. Install the backflow assembly in the existing pump house located on the Hogan Park Golf Course. The RPZ shall be certified upon installation by a licensed backflow preventor tester.

5. Installation of controller. Install controller in strict accordance with the manufacturer's specifications and as shown on the plans.

6. Project supervision. It is the superintendent's responsibility to notify the Engineer of work accomplished and to maintain a set of plans on the site at all times on which all field adjustments or deviations from the drawings are to be recorded for the preparation of the as-built drawings. The field plans must at all times be available for the inspection of the Engineer.

As-built drawing. Within thirty days of acceptance of the irrigation installation, furnish a set of as-built drawings on reproducible film base sheets prepared by a qualified draftsman.

The final ten percent payment of Item 170 will not be paid until acceptable as-built drawings are approved. If as-builts are not approved within the thirty-day period and the contract is complete, time charges will resume. The Engineer will check these base sheets to be sure they are a true reflection of the project conditions. Correct any errors that are found. The drawings must show all valve locations by triangulation from a fixed object and any change to sprinkler head location and rerouting of main and/or lateral lines. Any changes of this nature shall be approved prior to installation.

Item 216: Proof Rolling

Proof rolling will be required on rock embankments where density tests are not practical and at other locations as directed.

Item 247: Flexible Base

The estimated quantity of flexible base is for the roadways as well as intersecting streets and driveways. The measured area for payment will be the crown width only. The side slope tapers are not included in the measurements for the flexible base but are considered subsidiary to this item.

The estimated quantity of foundation course shown is for the roadway as well as intersecting streets and driveways. The measured area for payment will be the crown width only. The side slope tapers are not to be included in the measurements for the foundation course but are considered subsidiary to this item.

Maintain moisture during compaction as directed by the Engineer. Determine the moisture content of the material in accordance with Tex-115-e or Tex-103-e as directed by the Engineer.

Item 344: Superpave Mixtures

Binder:
Provide a binder that has a performance grade of 70 -22 (PG 70 -22) for both the “SP-B” and the “SP-D” mixes.

Aggregate quality:
Furnish class “B” aggregate for the type ”SP-B” and “SP-D” mixes.

Furnish aggregates that meet sac requirements for the shoulders and/or ramps.

The district laboratory will perform magnesium sulfate soundness (Tex-411-A) testing for project acceptance. The minimum number of tests required will be one (1) for every 25,000 tons of aggregate or as directed.

Mixture design:
Design a mixture with a gradation that has stone on stone contact and passes below the reference zone.

Test method Tex-530-C (Boil Test) will not be required.

Placement:
Semi-trailer type vehicles are specifically prohibited from dumping directly into the finishing machine for the finished surface. This type of haul truck will be allowed to unload into the finishing machine if the trailer is equipped with an auger slatted chain or another approved conveyor.

Place mixture when the roadway surface temperature is equal to or higher than the temperatures listed in table 1 (shown below), unless otherwise approved or shown on the plans. Measure the roadway surface temperature with a handheld infrared thermometer. Unless otherwise shown on the plans, place mixtures only when weather conditions and moisture conditions of the roadway surface are suitable in the opinion of the Engineer.

Table 1
Minimum pavement surface temperatures

Specification Item number	High Temperature Binder grade	Minimum pavement surface Temperatures In degrees Fahrenheit	
		Subsurface Layers or Night paving Operations	Surface Layers Placed in Daylight Operations
Items 340, 341 & 344	PG 64	45	50
	PG 70	55	60
	PG 76	60	60
Items 342 and 346	PG 76	65	70
	Asphalt rubber (A-R)	65	70

Contractor shall not be allowed to use RAP for main lane roadway construction follow typical sections included in the plans.

Fog seal shall not be required on top layer.

Item 400: Excavation and Backfill for Structures

Aggregate for cement stabilized backfill will be an approved material.

The addition of cement stabilized backfill under the pipe will not be required for this project. However, the Contractor will be required to shape the subgrade (trench bottom) to conform to a class “C” bedding in sand or loam. If rock or rock outcrops are encountered, a class “B” bedding consisting of sand or chat material will be required under the pipe.

Item 416: Drilled Shaft Foundations

For drilled shaft foundations for roadway illumination assemblies, provide class “C” concrete with 6-1/2” slump for dry type placements in accordance with table 2, slump requirements.

Locations of foundations shown on the plans are for diagrammatic purposes only and may be varied to meet local conditions, subject to approval. Stake these locations and have them approved by the inspector before installation of foundations. This will ensure that all luminaires and mast arms are clear of all overhead lines and underground utilities before drilling begins.

The signal inspector together with the contractor will calculate the vertical signal head clearance before placing any traffic signal pole foundation.

Notify the Inspector 48 hours prior to forming and placing concrete in any of the Signal Pole and Controller Foundations. Do not place concrete without an Inspector present. Failure to inform the Inspector and provide adequate time to arrive on the job site may result in removing and replacing the foundation.

Item 421: Hydraulic Cement Concrete

Furnish disposable 4" cylinder molds and caps that meet testing tolerances.

The Engineer will provide strength testing equipment for acceptance testing.

Within seven (7) days after concrete has been placed for foundations for traffic signals, roadway illumination assemblies, or high mast illumination assemblies, provide a rub finish for exposed surfaces in accordance with Item 427, Surface Finishes for Concrete, Article 4.3.3.

Furnish type II or IP cement.

All plants and trucks will be inspected and approved by the Engineer in lieu of the NRMCA or non-department Engineer sealed certifications. The criteria and frequency of the Engineer approval of plants and trucks is the same used for NRMCA certification.

Item 423: Retaining Walls

The concrete block retaining wall will be "Keystone Retaining Walls" as manufactured by Jewell Concrete Products, Inc., P.O. Box 7115, Waco, Texas 78716, (800) 792-3216, or "Anchor Wall System" as manufactured by Pavestone Company, P.O. Box 1868 Grapevine, Texas 76051, (817) 481-5802 or approved equal. The blocks will be approximately 8 inches by 18 inches by 24 inches deep (stand). Cap blocks will be approximately 8 inches by 18 inches by 12 inches deep.

As needed, blocks are to be cut by mechanical means and not broken.

Filter fabric material will be required behind the granular backfill as shown on the plans. A full half inch high bead of waterproof adhesive such as liquid nails or an approved equal will be applied between AOP cap units and the next course, as directed.

The installation of the wall will conform to the grades, layout and details shown on the plans. Refer to and adhere to the manufacturer's specifications for installation procedure regarding alignment of base course, setting of individual blocks, setting of fiberglass tie-pins, backfill, and setting the top course.

Construction of the retaining wall will be coordinated with the construction of the embankment. Furnish shop drawings to the Engineer to verify the manufacturer's recommendations regarding

the placement of earth reinforcement to meet the design parameters and stability criteria as shown in the plans.

Stake all wall locations in the field, and have approved prior to wall construction.

Item 432: Riprap

Use approved expansion joint material and place between the proposed riprap and curb and gutter.

Reinforce all riprap on this project with no. 3 bars spaced 12 inches O.C.B.W. or no. 4 bars spaced at 18 inches O.C.B.W.

Broom finish all riprap on this project unless otherwise directed.

Item 449: Anchor Bolts

Prior to installation of nuts for traffic signal poles, roadway illumination poles, high mast illumination poles, or overhead sign support structures, coat the entire length of exposed anchor bolt threads with Crouse-Hinds Tl-2, O-Z Gedney Stl, Or Thomas & Betts Kopr-Shield compound electrically conducting protective thread lubricant.

Item 464: Reinforced Concrete Pipe

At locations where existing culverts are cut, use class "A" concrete to patch the areas at the joint between the new construction and the existing structure.

Item 502: Barricades, Signs, And Traffic Handling

Stop equipment for traffic when crossing any traffic lanes. Furnish flaggers to warn equipment operators of approaching traffic, unless otherwise directed.

Relocate or remove temporary signs as necessary. This work is considered subsidiary to various bid items.

Use an advanced warning flashing arrow panel for the closing of traffic lanes. Provide one standby unit in good working condition at the job site ready for immediate use.

Keep all barricades and construction signs up and in place until partial acceptance is complete. Maintain "No Center Line", "Do Not Pass" and "Pass With Care" signs until the permanent lane markings have been placed and accepted.

Place orange fencing around sidewalk, wheelchair ramps and other pedestrian areas that pose a hazard to pedestrian traffic as directed.

Use Shoulder Drop-Off (CW8-9A) signs during construction when shoulder drop-off conditions are 3 inches or greater or as directed. Placement shall be in accordance with the “Texas Manual on Uniform Traffic Control Devices”.

This project has a regulatory work zone speed reduction within the project limits. The work zone speed limit is reduced from 40-45 mph to **30** mph. Placement of speed reduction zone signs shall comply with BC(3)-14. Speed resumption sign(s) is required at the end of a speed reduction zone.

Place chevrons, at a minimum, on every other drum used for outsides of curves, merging tapers and shifting tapers.

Vertical panels shall be self-righting.

Use Temporary Traffic Control (TTC) for this project as detailed on the latest BC standard plan sheets, and WZ (BTS-1 and BTS-2)-13, as provided for in Part VI of the Texas Manual on Uniform Traffic Control Devices, and as indicated on the title sheet.

In addition to the TTC and the latest WZ standard plan sheets, install barricades and warning signs, as appropriate, to adequately warn motorists. Permanent signs may be installed when construction in an area is complete and they will not be in conflict with the traffic control plan for the remainder of the job.

Existing signs are to remain as long as they do not interfere with construction and they do not conflict with the traffic control plan.

When traffic is obstructed, arrange warning devices in accordance with arrangements indicated in the latest edition of the "Texas Manual on Uniform Traffic Control Devices.” When advanced warning flashing arrow panels and/or changeable message sign is specified, have one standby unit in good condition at the job site.

Cover or remove any work zone signs when work or condition referenced is not occurring.

No work will be permitted to commence on the road before sunrise and shall be arranged so that all machinery and/or equipment shall be away from the roadway near the R.O.W. line after sunset. Any operations requiring lane closures within any City Limits shall not begin before 9:00 A.M. or continue past 4:00 P.M.

Do not place barricades, signs, or any other traffic control devices where they interfere with sight distance at driveways or side streets. Provide access to all driveways during all phases of construction. Attention is called to the fact that all locations used for storing construction equipment, and materials of any type within the right of way shall be approved by the Engineer.

Use of the right of way for these purposes will be restricted to those locations where driver sight distance to businesses and side street intersections is not obstructed and at other locations where an unsightly appearance, as determined by the Engineer, will not exist.

Remove any obstructions to existing drainage due to the Contractor's operations as required, at the Contractors expense

Coordinate with the Alldredge property prior to construction of their driveway. Ensure that parking lot operations are not inhibited and access is always maintained to this property.

Item 506: Temporary Erosion, Sedimentation, and Environmental Controls

The total disturbed area for this project is 19.6 Acres. The disturbed area in this project, all project locations in the contract, and Contractor Project Specific Locations (PSLS), within 1 mile of the project limits, for the contract will further establish the authorization requirements for storm water discharges. The department will obtain an authorization to discharge storm water from the Texas Commission On Environmental Quality (TCEQ) for the construction activities shown on the plans. The Contractor is to obtain any required authorization from the TCEQ for any Contractor PSLS for construction support activities on or off the right of way. When the total area disturbed for all projects in the contract and PSLS within 1 mile of the project limits exceeds 5 acres, provide a copy of the Contractor NOI for PSLS on the right of way, to the Engineer (or to the appropriate MS4 operator when on an off-state system route).

Upon acceptance of the project, all SWP3 devices will become property of the City of Midland and maintenance responsibility is transferred to the City of Midland until final stabilization is attained.

Item 529: Concrete Curb, Gutter, And Combined Curb And Gutter

Use and place approved expansion joint material between the existing curb and the proposed curb and at least every 100 feet in the proposed curb sections.

Use polypropylene fiber reinforcing when required at a rate of 1.5 lbs/cy in lieu of wire reinforcing.

Polypropylene fibers may not be used in lieu of reinforcing steel.

After construction, restore the adjacent surface to a condition approved by the Engineer. Consider this work subsidiary to this bid item.

Contractor should be aware that bid Item 529 6008 CONC CURB & GUTTER TY II refers to the use of the City of Midland's 7" height curb and gutter detail as included in the plans and not the TXDOT standard TY II detail.

Item 530: Intersections, Driveways, And Turnouts

Plan calls out to construct 100' asphalt transition at the intersection of Fairgrounds and Pine St. Contractor to ensure adequate transition is made with existing gravel road at this location. Contractor to contact City to ensure adequacy of transition.

Item 531: Sidewalks

Polypropylene fiber reinforcing is required at a rate of 1.5 lbs/cy in lieu of wire reinforcing.

The curb ramp locations shown in the plans have taken into account the geometric features of the intersection, traffic signals, and the pavement markings. If anything changes during construction, the location of curb ramps must be adjusted to ensure they meet TAS/ADAAG requirements.

Item 585: Ride Quality For Pavement Surfaces

Use surface test type "B" pay adjustment schedule **"3"** to evaluate ride quality of the travel lanes in accordance with Item 585, "Ride Quality for Pavement Surfaces."

Item 618: Conduit

Place a single continuous piece of warning tape in accordance with this item along the entire length of each underground conduit installation. Locate warning tape approximately twelve inches above conduit as indication that a buried electrical line exists below the tape. Cement stabilized backfilled conduit is exempt from this requirement. Comply with warning tape requirements for any installation of buried conduit, including portions of conduit located outside of cement stabilized backfill.

When trenched conduit is proposed beneath roadways under construction, install conduit after grading operations have been completed and before any surfacing begins at that location.

When conduit must be placed by trenching in paved areas, cut and restore pavement in accordance with Item 400, Article 400.3.1.1.2, and as shown in the plans. Cut pavement using only approved saws. Cutting and restoring pavement will not be paid for directly, but will be subsidiary to this item.

The locations of conduit and ground boxes are diagrammatic only and may be shifted to accommodate field conditions as directed.

Maintain a minimum 24" depth from finish grade to top of conduit for conduit proposed beneath pavement.

Use an approved ditching method. Place and backfill conduit proposed beneath existing pavement in accordance with the section shown in the plans. Schedule and complete work so that all lanes open to traffic at night.

For conduit raceways that are intended to remain empty or unused, extend the lower end of conduit from the face of the foundation to a minimum of 1' beyond the edge of the foundation or the riprap apron, whichever is farthest, and use conduit cap fittings for both ends of conduit. Do not glue caps or use duct tape when capping ends of conduit raceways that are intended to remain empty. Prevent dirt and debris from entering raceways during construction by temporarily capping both ends of open raceways. Other than conduit raceways that are intended to remain unused, fit each exposed end of raceways with a bushing. Where steel raceway is used, install a ground-type bushing and connect the bushing and ground rod with a bonding jumper.

Item 620: Electrical Conductors

In accordance with ED(3), Electrical Details-Conductors, identify the conductors of each branch circuit on this project with permanent non-metallic tags at every accessible location. Fasten each tag to the conductors with two plastic straps. Match tag numbers for branch circuits with circuit numbers as shown on the plans.

Note the requirements of Item 7, Article 19. Electrical Requirements, of the standard specifications.

Do not exceed four hundred and fifty feet (450') between ground boxes where conduit and conductor is used.

Terminate all electrical conductors from the controller at the termination block in the traffic signal pole hand hole whether in use or not.

All wiring not covered by the plans and specifications shall be in accordance with the National Electric Code (NEC).

When the specifications for electrical items require UL listed products, it will be construed to mean UL listed or CSA listed.

Bond together any grounding conductors that share the same conduit, junction box, ground box, or structure, at every accessible point in accordance with the National Electrical Code (NEC).

Item 621: Tray Cable

All proposed tray cable and number of conductors required shall be as shown on the plans. No splices shall be allowed.

Item 624: Ground Boxes

Locations of ground boxes are approximate. Final locations will be as approved. Provide an apron for ground boxes as shown on standard ED (4)-14.

Item 628: Electrical Services

Initiate and complete the construction of all electrical services at the earliest possible time to facilitate lead-time required to coordinate with utility companies and establish power for the proposed electrical services.

Before construction or installation of any electrical service(s) on this project, contact City of Midland Traffic Engineering Office at 432-685-7928 to facilitate coordination with the appropriate energy company or companies.

Physically identify the location for each proposed electrical service on the project, and request the physical address for each proposed electrical service identified; the Engineer will provide the physical address for each respective location. Permanently mark the physical address of any proposed electrical service on the respective meter base lid. Use one of two methods for permanent marking. For the preferred method of marking, use an approved die-stamp, with a minimum ½" height of alpha-numeric characters and stamp physical address on meter base lid. After stamping, apply coating of zinc-rich paint to the stamped area. Do not damage meter base. Replace meter base if determined by the Engineer as damaged or unacceptable. No additional compensation will be made for replacement of meter bases in the event that an unacceptable determination is made. When approved, use an alternate method of marking by providing a brass or aluminum plate tag with the physical address embossed by a machine-stamp process. Affix this tag to the meter base by a method approved by the Engineer. Provide a sample of a stamped plate tag for approval of this alternate method. The permanent physical address is required to be marked on the meter base prior to initiation of electrical service. Materials, labor, tools, equipment and incidentals necessary to complete this work will be considered as subsidiary to Item 628, Electrical Services.

Use materials from the prequalified material producer lists as shown on the Texas Department of Transportation (TxDOT) – Construction Division's (CST) Material Producer List. See TxDOT website (www.TxDOT.gov) - business > resources > material producer list - for list of prequalified manufacturers. Category is "Roadway Illumination and Electrical Supplies." No substitutions will be allowed for materials found on this list."

For incidental material and parts necessary for construction of electrical services, including the service entrance weather-head, rigid metal conduit (RMC) and PVC conduit, conduit fittings, service conductors, circuit breakers, ground rods and clamps, grounding bushing (s), and mounting hardware including straps and channel brackets for conduit support, furnish products and/or materials that comply with the plans and specifications. Prior to construction of any electrical service, submit to the Engineer respective catalog cut sheets for incidental materials and parts. Electrical services constructed of materials or parts which do not comply with the plans and specifications will be cause for rejection of a portion or all of the work.

Install photocell(s) facing north when practical.

Item 644: Small Roadside Sign Assemblies

All new sign supports for stop and yield signs will have a 12" red strip of Type C high specific intensity reflective tape. Place the top of the tape 4' above the edge of the roadway. This work will not be paid for directly and will be subsidiary to the pertinent bid item.

For standard small sign details and dimensions, refer to the "Standard Highway Sign Designs for Texas (SHSD)"; a supplement to the Texas Manual on Uniform Traffic Control Devices (TMUTCD)".

All signs called out as "TR – To remain" shall be protected by the contractor during construction. Any damage made to those signs will be the responsibility of the Contractor.

Item 656: Foundations For Traffic Control Devices

Install a 5/8" x 8' copper clad ground rod in all signal poles and signal controller foundations, and make a system ground connection at the ground rod in addition to the ground connection required by the standard sheet, "Traffic Signal Controller Slab And Base". Maintain two inches (2") of ground rod extension above the finish surface of the foundation. Material, labor, tools, and incidentals necessary to provide and install this ground rod are considered subsidiary to the various bid items**.**

Foundations for traffic signal controller is subsidiary to Item 680.

Locations of foundations shown on the plans are for diagrammatic purposes only and may be varied to meet local conditions, subject to approval. Stake these locations and have them approved by the inspector before installation of foundations. This will ensure that all luminaires and mast arms are clear of all overhead lines and underground utilities before drilling begins.

The signal inspector together with the contractor will calculate the vertical signal head clearance before placing any traffic signal pole foundation.

Install traffic signal controller foundation (City of Midland type).

Item 662: Work Zone Pavement Markings

After permanent pavement markings are placed, cut off tabs flush with the pavement. Remove tabs from the project and dispose of properly.

Materials used for non-removable work zone pavement markings will be paint and beads or other approved materials.

Item 680: Highway Traffic Signals

This project shall consist of the installation of all of the materials necessary for complete signal systems as follows:

1. Provide submittal literature for all traffic signal equipment before installation.

   Equipment will not be accepted for delivery or any payment made until the equipment, materials lists and shop drawings have been approved by the Engineer. Approval by the Engineer does not relieve the Contractor of his responsibilities to meet the requirements of the specifications and plans. All submittal literature shall be approved and verified for all the furnished traffic signal equipment prior to its installation.

2. Furnish and install all required materials and equipment necessary for the complete and operating traffic signal installation.

3. Accomplish the erection of poles and luminaires located near any overhead electrical lines using established industry and utility safety practices. Consult with the appropriate utility company before beginning such work.

4. The locations shown on the plans for controller foundations, conduit and other items may be adjusted to better fit field conditions as approved, due to conflicts with utilities.

5. Provide vibration dampers for mast arms 28 feet long and longer. Use dampers 18"x48" for arms up to 48 feet long, and 16"x66" for longer mast arms. Install using Astro-sign Brac, Signfix aluminum channel, or equal, at a maximum of 3 feet from the end of the mast arm.

6. Provide a qualified technician on the project site to place the traffic signals in full operation.

7. The City of Midland Signal Shop will not assume responsibility for the maintenance of the traffic signals until the project is completed and accepted.

8. Wire the signal installation to operate in accordance with phase diagrams in these plans. Timing and phasing will be changed and maintained by the City of Midland Traffic Engineering Group. A copy of all revisions to the original timing and phasing plans will be delivered to the City of Midland Traffic Engineering group and one copy is to stay in the controller cabinet at the completion of the project.

9. Place the traffic signal into operation after all required striping is complete and all conflicting signing is removed.

10. Project Inspection: For electrical project inspection, contact the City of Midland Signal Shop in advance of needed inspections. At the time of the final electrical inspection, the City of Midland will create a punch list of discrepancies to be corrected before signal is put into flash mode.

11. Signal Turn-On: Notify Mr. Scott Pyle with the City of Midland Signal Shop approximately 48 hours in advance of the signal turn on. Signal technicians from the City of Midland must be present when the signals are placed in full operation. Unless otherwise directed, place the signal in full operation between 9:00 A.M. - 12:00 (NOON) on Mondays, or Wednesdays only.

12. Test Period for Signals: The signals shall operate continuously for a minimum of 30 calendar days in a satisfactory manner. Equipment failures during these 30 days will cause the test period to start over.

13. During the thirty-day test period, the City of Midland Signal Shop will be the First Responders to all trouble calls. They will, in turn contact the Contractor. Provide qualified personnel to respond to these and all trouble calls. Repair and diagnose any malfunctions to signal equipment supplied for the project. Provide a local telephone number, not subject to frequent changes and available to receive calls on a 24-hour basis. Respond to reported calls within a reasonable travel time, (i.e. from a Midland address), but not more than 2 hours maximum. Make appropriate repairs within 24 hours. Place a logbook in the controller cabinet and keep a record of each trouble call reported. Notify the Engineer of each trouble call. The error log in the conflict monitor shall not be cleared during the thirty-day test period without approval. If it is necessary to replace equipment, such as a controller, in order to return the signals to normal operation, the City of Midland will replace the equipment with loaned equipment until the original equipment is repaired and then replaced.

Wire signal installations to operate in accordance with the phase diagrams shown in the plans. Set time intervals as directed.

Provide an approved technician who is available at all times by an on-call basis for maintenance of any installed signal equipment during the period of time in which installed signals are operating, including the test period for this project.

Provide a minimum length of 24" for each signal cable in each signal pole. All conductors are to be continuous without splices between terminals.

The Contractor will furnish and install Opticom GPS , cable, radio unit and cabinet equipment . Work or incidentals necessary to install Opticom GPS system equipment will be considered subsidiary to various bid items. Opticom GPS system quantities are approximate as follows:

Opticom Model 764 Four Channel Phase Selector -	1 EA
Opticom Model 768 Auxiliary Interface Panel -	1 EA
Opticom Model 3100 GPS Receiver/Radio Assembly -	1 EA
Mounting hub and related accessories -	1 LS
Opticom Model 1070 Detector Cable -	25 LF

Supply a TS-2 Type 1 traffic signal controller assembly, verify the controller has ethernet capability, an internal embedded web page (web server), and is I.P. addressable. Provide the controller with the latest firmware release. Provide the software and all necessary components for an intelligent detection control system. Provide cabinet option 4 as defined by DMS-11170.

Replace any LEDs that fail during the thirty (30) day test period in a timely manner. Equipment and incidentals necessary for replacement of failed LEDs are considered subsidiary to the various bid items and will not be paid for directly.

Item 682: Vehicle and Pedestrian Signal Heads

Provide all signal heads from the same manufacturer.

Provide all LED traffic signal lamp units, as well as the various components of the signal heads to be installed within this project.

Traffic signal heads shall be yellow aluminum polycarbonate. Signal heads mounted on poles and mast arms shall be level and plumb and aimed as directed. Cover all signal faces until placed in operation.

Furnish and install in aluminum housing, LED “Walking Person,” and “Hand” icon pedestrian signal modules with countdown feature.

Housing for LED pedestrian signal module shall be paid for under Item 682 “Vehicle and Pedestrian Signal Heads.”

For all proposed mast arm pole assemblies, provide mounting bracket assembly as described on the State Standard Sheets "Single Mast Arm Assemblies."

Item 684: Traffic Signal Cables

Attach permanent non-metallic tags to each signal cable in the access compartment of each signal pole and inside the traffic signal controller cabinet. Conductor (s) and/or cable (s) which connects signal heads to the terminal block will be tagged to indicate which specific signal head is being served. Signal cable at the traffic signal controller cabinet will be tagged to identify separate signal phases. Material, labor, tools, equipment, and incidentals are necessary to perform this work are subsidiary to the various bid items.

Include extra cable length in each run to provide adequate slack, at each ground box, foundation and signal head. Identify each cable as shown on the plans (cable 1, etc.) with pre-numbered identification tags of plastic, tape or marking labels at each signal head, ground box, terminal block, pole base and controller.

All cables shall be continuous without splices from terminal point to terminal point or as directed or approved. All proposed signal cable and number of conductors required shall be as shown on the plans. Terminate all electrical conductors from the controller at the termination block in the signal pole hand hole whether in use or not.

Provide an extra 10’ for each cable terminating in the controller cabinet. All cables shall be continuous without splices from terminal point to terminal point. All proposed signal cable shall be #14 AWG stranded copper. Provide the number of conductors as shown on the plans.

Item 686: Traffic Signal Pole Assemblies (Steel)

Provide all signal poles from the same manufacturer.

Use materials from the prequalified material producer lists as shown on the Texas Department of Transportation (TxDOT) – Construction Division’s (CST) material producer list. Category is “Roadway Illumination and Electrical Supplies.”

Radar Vehicle Sensing Device

The Contractor shall furnish and install the radar detection system. The Contractor shall install, aim and program all detectors (including detector cable) as shown on the plans per City detail. The Contractor shall refer to plans for radar detection zones placement. The Contractor shall have previously completed installation training provided by the Radar Detection System Manufacturer or make arrangements for the Manufacturer to install and calibrate the system.

A 4 channel back plate is required for presence detection (RPDD). If advanced detection (RADD) is also used a 6 channel back plate shall be used. Advance detection is to be used on roadways with approach speeds of 40 MPH or greater.

Accessible Pedestrian Signal Units

At intersections where a minimum of 10 ft. spacing between adjacent accessible pedestrian signal units is not possible, each accessible pedestrian pushbutton must be provided with the following features:

- A pushbutton locator tone,
- A tactile arrow,
- A speech walk message for the walking person indication and
- A speech pushbutton information message.